Related Applications

This application claims the benefit of Provisional Applications Serial Nos. 60/222800, filed 08/02/00, 60/242232, filed 10/17/2000 and 60/288,273 filed 05/02/2001. This application is related to pending formal applications Serial No. 09/299,022 and 09/433,964.

Previous filings by the author are included by reference for the entirety of their disclosures. The first is "Tilt-Compensated Interferometers," filed 4/26/1999, serial number 09/299,022. More are provisional applications serial number 60/107,060, filed 11/04/98, titled "FT-IR Signal Processing: Part I," serial number 60/119,429, filed 02/09/99, titled "FT-IR Signal Processing: Part II," a formal application entitled "Signal Processing for Interferometric Spectrometry" serial number 09/433,964 filed 11/04/99. Further provisional applications which are included for the entirety of their disclosures are titled "Interferometers and Interferometry," serial number 60/228800, filed 08/02/00, titled "Interferometers and Interferometry: Part 2," serial number 60/242232, filed 10/17/2000, and titled "Interferometers and Interferometry: Part 3," serial number 60/288,273 filed 05/02/2001. The book by Griffiths and deHaseth, "Fourier transform spectrometry," ISBN 0-471-09902-3, is also included for the entirety of its content.

Portions of the inventions disclosed here have been made under contract with the United States Federal Government through the Department of Defense under contracts DAAD13-01-P-0012 and DAAD-05-96-P-3102. The Government has certain rights in these inventions.

Background and Summary of the Invention

It is an object of the present inventions to provide new interferometers, which are better than prior art in respect to stability, scan speed and cost of manufacture. It is an object of the present inventions to provide signal-processing techniques for interferometry, particularly very rapid scan interferometry. It is an object of the present inventions to improve the state-of-the-art in photometric accuracy of interferometric measurements.

Brief Description of the Drawings

Figure 1 shows a diagram of a tilt-compensated interferometric spectrometer.

Figure 2 shows a diagram of the reflector/beamsplitter assembly of Figure 1.

Figure 3 shows a diagram of a Michelson interferometer incorporating refractive path difference scanners.

Figure 4 shows a diagram of a modified Michelson interferometer design incorporating refractive path difference scanners.

Figure 5 shows a diagram of a bearing and support mechanism for producing a nutating motion of a refractive scanning element.

Figure 6 shows a diagram of a remapping function applied to modify the apparent wavenumber spacing of the x-axis to actually wavenumber spacing.

Figure 7 shows a diagram of a signal processing chain that has the effect of recording the inverse transfer function of a detector signal chain.